

1 **(November 17, 1997)**

2 **Testing**

3 The Contractor shall make shotcrete test panels for evaluation of shotcrete  
4 quality, strength, and aesthetics. Both preproduction and production test panels,  
5 shall be prepared. All cores obtained for the purpose of shotcrete strength testing  
6 shall have the following minimum dimensions:

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- 8 a. The core diameter shall be at least 3 times the maximum aggregate size,  
9 but not less than 50 millimeters.
- 10
- 11 b. The core height shall be a minimum of 1.5 times the core diameter.
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13 The Contractor shall remove at least three cores from each 900 by 900 millimeter  
14 shotcrete test panel in accordance with AASHTO T 24. Cores removed from the  
15 panel shall be immediately wrapped in wet burlap and sealed in a plastic bag.  
16 Cores shall be clearly marked to identify from where they were taken and whether  
17 they are for pre-production or production testing. If for production testing, the  
18 section of the wall represented by the cores shall be clearly marked on the cores.  
19 Cores shall be delivered to the Engineer within 2 hours of coring. The remainder  
20 of the panels shall remain the property of the Contractor.

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22 **Pre-production Testing**

23 At least one 900 by 900 millimeter panel for each mix design shall be  
24 prepared for evaluation and testing of the shotcrete quality and strength. One  
25 1200 by 1200 millimeter qualification panel shall be prepared for evaluation  
26 and approval of the proposed method for shotcrete installation, finishing, and  
27 curing. Both the 900 millimeter and the 1200 millimeter panels shall be  
28 constructed using the same methods and initial curing proposed to construct  
29 the shotcrete facing, except that the 900 millimeter panel shall not include  
30 wire reinforcement. The 900 millimeter panel shall be constructed to the  
31 minimum thickness necessary to obtain the required core samples. The  
32 1200 millimeter panel shall be constructed to the same thickness as  
33 proposed for the production facing. Production shotcrete work shall not begin  
34 until satisfactory test results are obtained and the panels are approved by the  
35 Engineer.

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37 **Production Testing**

38 The Contractor shall make at least one 900 by 900 millimeter panel for each  
39 section of facing shot, or as many as directed by the Engineer. A section is  
40 defined as one day's placement. The production panels shall be constructed  
41 using the same methods and initial curing used to construct the shotcrete  
42 wall, but without wire reinforcement. The panels shall be constructed to the  
43 minimum thickness necessary to obtain the required core samples. If the  
44 production shotcrete is found to be unsuitable based on the results of the test  
45 panels, the section(s) of the wall represented by the test panel(s) shall be  
46 repaired or replaced to the satisfaction of the Engineer at no cost to the  
47 Contracting Agency.